

REMEDIATION OF CONTAMINATES INCLUDING
LOW BIOAVAILABILITY HYDROCARBONS

ABSTRACT

[0094] A method of treatment of a contaminated material contaminated with an organic compound is provided. The method includes treating the contaminate with a bioremediation step followed by a chemical oxidation step. The method includes contacting the contaminate with a microbial consortium under conditions suitable for the consortium to mediate solubilization or biodegradation of the organic compound or reaction products thereof. The subsequent chemical oxidation step includes treating the bioremediated contaminate with: a transition metal in soluble form; a chelator of the transition metal, to form a transition metal:chelator complex; an oxidizing agent that provides a reactive free radical in the presence of the transition metal complex; and a buffering compound to maintain the pH in a neutral range. The reactive free radical initiates a chemical reaction with the organic compound to produce reaction products of the organic compound which can be further degraded by the added microbial consortium or by naturally-occurring microorganisms for more extensive remediation.